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Application No.: 09/910,170
Art Unit: 2161

Remarks

In this amendment, new claims 43-51 have been added. Claims 1-9, 17, 36-38 and 42 were previously canceled. Pending in the application following entry of this amendment are claims 10-16, 18-35, 39-41 and 43-51 of which claims 10, 16, 24, 26, 30, 34, 35, 43, 50 and 51 are independent. The following comments address the stated grounds for rejection, and the Applicant respectfully submits that the presently pending claims, as identified above, are now in a condition for allowance.

I. Summary of Prosecution to date

Applicant filed the present application on July 20, 2001. An initial office action issued on June 8, 2004 to which the Applicant duly filed a response on October 8, 2004. A subsequent non-final office action issued on March 1, 2005 objecting to some of the claims based on 35 U.S.C. §101 and 112 while indicating others were allowed or allowable. Applicant filed a response on April 19, 2005 amending some of the claims in an attempt to address the Examiner's 35 U.S.C. §101 and 112 rejections. A third non-final office action issued on July 14, 2005 in which the Examiner withdrew the indication of allowability and allowed claims and cited a new reference, U.S. Patent No. 6,901,579 ("Suguta") as supporting a rejection under 35 U.S.C. §102. Applicant filed a response on October 14, 2005 traversing the pending 102 and 112 rejections. A final Office Action maintaining the rejection subsequently issued on January 27, 2006 to which Applicant filed a response on April 27, 2006, which resulted in an advisory action issuing on June 21, 2006. Applicant filed a Notice of Appeal and Request for pre-appeal brief conference on July 27, 2006. Prosecution was reopened following the pre-appeal brief conference and another final office action issued on October 11, 2006 in which the Examiner changed the basis of the rejection for the Sugata reference from 35 U.S.C. §102 to 35 U.S.C. §103. Following a telephone interview with the Examiner, Applicant filed an additional Amendment and Notice of Appeal on April 11, 2007. An Advisory Action issued on April 25, 2007. Applicant files this Amendment and accompanying Request for Continued Examination in response to the April 25, 2007 Advisory Action.

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B. Rejection of Claims 16 and 18-23 under 35 U.S.C. §112

Claim 16, upon which claims 18-23 depend, has been amended to recite the additional claim element of "generated code generated using the automatic code generator that is transmitted for execution on a target." While the Examiner seemed to be asserting that the previous version of claim 16 only contained a single claim element and was therefore indefinite, a position with which the Applicant does not agree, the amendment of claim 16 has added an additional claim element. Applicant believes amended claim 16 addresses the Examiner's concerns and requests reconsideration of the rejection. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 16 and 18-23 under 35 U.S.C. §112.

VI. Claim Rejections under 35 U.S.C. §103

Claims 10-16, 18-35 and 39-41 stand rejected under 35 U.S.C. §103(a) as being anticipated by U.S. Patent No. 6,901,579 ("Suguta"). Applicant respectfully traverses the rejection. The rejections will be discussed below in the order of independent claims 10, 16, 24, 26, 30, 34 and 35 and their respective dependent claims.

A. Claims 10 and 26

Claim 10 reads as follows:

> A computer implemented method comprising:
>   specifying a model, the model including sections, a first subset of the sections designated post-processing unit sections and a second subset of the sections designated as core processing unit sections;
>   generating software source code for the model with a code generator using the second subset; and
>   transmitting the generated software source code for execution on a target.

Claim 26 reads as follows:

> A computer program product residing on a computer readable medium having instructions stored thereon which, when executed by the processor, cause the processor to:

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> specify a model, the model including sections, a first subset
> of the sections designated post-processing unit sections and a
> second subset of the sections designated as core processing unit
> sections;
>> generate software source code for the model with a code
> generator using the second subset; and
>> transmit the generated software source code for execution on a target.
>
> [underlined claim elements added in this Amendment]

As set forth in Applicant's claims and described in the specification, Applicant's invention generates code from a model that includes sections with post processing elements (portions of the model non-critical to the real time execution of the model) and core elements (portions of the model critical to the real-time execution of the model). Code is generated based on the core/critical elements and transmitted to a target (such as a target computer) where it is executed. Data from that real-time execution may then be transmitted back for use by the model in a non-real time fashion (by the non-critical/non-real time elements of the model).

Suguta discusses an approach for automatically generating a program or a portion of a program in an object-oriented programming language (column 1, lines 11-14). Suguta verifies whether an automatically generated portion of a program contains any definitions that conflict with other definitions in the program (column 2, lines 44-48) *without waiting for the compiling of the generated program* (see abstract). Other objects of the Suguta invention are listed as the automatic generation of a copy constructor and the general aim of improving the productivity of program development by enabling the automatic generation of an object oriented program.

More specifically, Sugata does not address transmitting code (whether it is executable code that has been compiled or source code that has yet to be compiled) to a target where the transmitted code is executed. As noted above, Sugata verifies whether an automatically generated portion of a program contains any definitions that conflict with other definitions in the program (column 2, lines 44-48) *without waiting for the compiling of the generated program* (see abstract). Sugata does not discuss transmitting code that is executed on a target.

Furthermore, Suguta also fails to disclose or suggest "a model, the model including sections, a first subset of the sections designated post-processing unit sections and a second

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subset of the sections designated as core processing unit sections," as required by claims 10 and 26. Suguta is entirely silent as to a model having post-processing unit sections and core processing unit sections. As a preliminary matter, Applicant respectfully notes that Suguta does not mention "models" anywhere as Suguta is not concerned with models. Sugata discusses generating object oriented program instructions from class definitions and not models. As all of Applicant's independent claims require code generated from a model and Sugata fails to disclose code generation, Sugata, for at least this reason, fails to support a rejection of claims 10 and 26 under 35 U.S.C. §103.

Additionally, in formulating the rejection of claim 10, the Examiner relies upon the arguments set forth in the Office Action (page 7) regarding claims 1, 8 and 9. In particular, the Examiner states, "As per claims 10-15, most of the limitations of these claims have been note [sic] in the rejection of claims 1, 8 and 9 above . . ." Similarly, as to claim 26, the Examiner refers to his early statements, "As per claims 24-29, all the limitations of these claims have been noted in the rejection of claims 1-23 above."

Applicant, therefore now reviews the arguments made with rejection to claims 1, 8 and 9, even though these claims have been cancelled. At pages 6 and 7 of the Office Action, the Examiner notes with respect to claims 1, 8 and 9 (emphasis in the original):

> Although Suguta discloses generation of source codes including *means for indicating the role of the class in the generated source code (See Suguta Title)*; it is noted, however, Suguta did not specifically detail the aspects of *model that are critical or non critical to a real time execution* as recited in the instant claims. However, One of ordinary skill in the art would have found it obvious, at the time of the invention, in the source code generation system of Suguta, that aspects that are critical or non critical is realized because when the system of Suguta is generating a source code, functions (although being part of the overall software) that are important to realized [sic] the source code generation are activated and functions (although being part of the overall software) that are not necessary for the generation of the source is [sic] not called or activated. In general, when a computer application or a computer operating system is being initiated, the modules that are necessary for the initiation of the software program is called; whereas, modules that are not needed

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for the computer program to initiate are not called. Further, the means for indicating the role of the class in the generated source code *(See Suguta Title)* disclose [*sic*] by Suguta is an indication that Suguta realized that it is important for its system to understand the role of each module in the overall source code generated so that each module can be called for its proper or appropriate role during execution of the source code. Therefore, the claimed feature of generating source code and identifying portions that are critical or non-critical can be realized during execution of the source code of Suguta since the determination of what is critical or non-critical to achieve execution of the generated source code is necessary and will be achieved in the background during execution of the generated source code.

Based on the above language, the Examiner acknowledges that Suguta does not disclose "a model having a first set of sections designated as post-processing sections and a second subset of sections designated as core-processing sections", as required by claims 10 and 26.

It appears, from the above quote, that the Examiner is arguing that it would have been obvious to one skilled in the art to realize what sections of a model are critical and non-critical when generating code with Suguta because functions to realize code generation are activated and functions that are not necessary to realize source code generation are not activated. This argument is flawed as the Examiner offers no evidence in either Sugata or any other prior art as to why the activation/non-activation of functions for code generation discloses or suggests the limitations of Applicant's claims. Other than the Examiner's statement, there is no specific reference to either Suguta or any other piece of prior art, that a model be specified to have a first subset of sections designated as post-processing unit sections and a second subset of the sections designated as core processing unit sections. Suguta is entirely silent with respect to these elements of the claimed invention and there is no reliance cited by the Examiner upon any other prior art. It appears that the Examiner is employing the teachings of the present application to create an obviousness argument. This is not permissible.

For at least the foregoing reasons, Applicant respectfully urges that the rejections of claims 10 and 26 be withdrawn and the claims be allowed.

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Additionally, Applicant's claims 10 and 26 both require the generation of software source code from a second subset of sections of the model containing core processing designated as core processing unit sections. As outlined above, Sugata is devoid of any disclosure related to specifying core-processing and post-processing sections in a model. It follows therefore that Sugata also does not disclose or suggest the generation of code from the core processing sections as required by claims 10 and 26.

In view of the above arguments, Applicant respectfully requests withdrawal of the rejection of claims 10 and 26 and their allowance.

D. Claims 11-15 and 39

Claims 11-15 and 39 depend on claim 10 and, as such, incorporate all of the elements of claim 10. Accordingly, claims 11-15 and 39 are not rendered obvious over the cited reference for at least the reasons stated above in connection with claim 10. Applicant respectfully requests withdrawal of the rejection of claims 11-15 and 39 and their allowance.

E. Claims 27-29

Claims 27-29 depend on base claim 26 and, as such, incorporate all of the elements of claim 26. Therefore, Sugata does not support a valid rejection of claims 27-29 under 35 U.S.C. §103(a). Applicant respectfully requests withdrawal of the rejection of claims 27-29.

F. Claim 16

As noted above, claim 16 has been amended and now recites "an interface to transmit code generated using the automatic code generator that is transmitted for execution on a target" as an element of the claimed system. As discussed previously in connection with claims 10 and 26, Sugata fails to disclose or suggest the transmitting of code that to a target where it is generated.

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Additionally, Applicant submits that Suguta fails to disclose or suggest other elements of claim 16. Specifically, Applicant submits that Suguta does not disclose or suggest at least the following two elements: "a GUI that is adapted to receive user inputs to specify components of a model in one of a first subset of sections designated as post-processing elements of a model and a second subset of sections designated as core elements of the model" and "an automatic code generator for generating code capable of real-time execution based on the second subset of sections," as required by claim 16. These claim elements will be discussed in sequence below.

Applicant submits that Suguta does not disclose "a GUI that is adapted to receive user inputs to specify components of a model in one of a first subset of sections designated as post-processing elements of a model and a second subset of sections designated as core elements of the model," as required by claim 16. The Examiner points to the language in Suguta at column 6, lines 30-56 as disclosing these claim elements (OA, page 8). Suguta discusses in Fig. 4 an automatic object-oriented program generation apparatus including an input/output unit (9). Suguta also discusses that a user (a programmer) can give an instruction such as a class definition (11) or a generation pattern description (41) to the computer system so that a program is generated. The user interface in Suguta appears to be adapted to receive a class definition (11) or a generation pattern description (41) from a user. This portion of Suguta, however, does not disclose or suggest a graphical user interface *that enables a user to specify which components of a model are post-processing elements or core elements of the model*, as required by claim 16.

Applicant also submits that Suguta does not disclose "an automatic code generator for generating code *capable of real-time execution based on the second subset of sections*," as required by claim 16. Suguta discusses a program generation unit (5) in Figure 3. In Suguta, the program generation unit (5) generates an object oriented language program using information on the internal structure of an input class definition (11) and a generation pattern description (41). Suguta, however, does not disclose or suggest an automatic code generator for generating code capable of real-time execution based on the second subset of sections.

Applicant respectfully submits that Suguta does not disclose generating code that is capable of real-time execution based on the second subset of sections. The Examiner points

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(OA, page 6) to the following language in Suguta at column 2, lines 40-51 as disclosing this

claim element.

> A first object of the present invention is to enable automatic generation of a copy
> constructor in an object-oriented programming language program which enables
> duplication of an object. Conventionally, such a program as shown in FIG. 2C
> must be made by a user. A second object of the present invention is to enable
> verification of whether or not an automatically generated program would include
> a definition which conflicts with that of an existing program when the program is
> generated. A third object of the present invention is improving the productivity of
> program development by enabling automatic generation of an object-oriented
> program.

The Examiner asserts in the Office Action that "since Suguta allows automatic

generation of source codes, generation of code that is capable of real-time execution is realized."

(See the Office Action, page 6, lines 9-11). Applicant respectfully disagrees.

There is no discussion in Suguta (either in the cited section above or elsewhere) that

discloses generation of code for a model that is capable of real-time execution, much less the

generation of code for a model that is capable of real-time execution based on the second subset

of sections designated as core elements of the model, as required by claim 16. Suguta is silent

with respect to code execution and does not disclose real-time execution of generated source

code. Therefore, Sugata cannot disclose or suggest "language from claim feature" as required

by claim 16.

In light of the aforementioned arguments, Applicant respectfully requests withdrawal of

the rejection of claim 16 under 35 U.S.C. §103(a) and its allowance.

G. Claims 18-23 and 40-41

Claims 18-23 and 40-41 depend on claim 16 and, as such, incorporate all of the elements

of claim 16. Accordingly claims 18-23 and 40-41 are not rendered obvious for at least the

reasons set forth above with respect to claim 16. Applicant respectfully requests withdrawal of

the rejection of claims 18-23 and 40-41 and their allowance.

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H. Claims 24, 34 and 35

Claim 24 has been amended to recite "transmitting the executable code for execution on a target," claim 34 has been amended to recite "transmit the executable code for execution on a target," and claim 35 has been amended to recite transmit the executable code to a target for execution." As discussed previously, Sugata fails to disclose or suggest this new claim element.

Applicant also submits that Suguta fails to disclose or suggest additional elements of claims 24, 34 and 35. Specifically, Applicant submits that Suguta does not disclose "receiving user input through a graphical user interface (GUI) specifying a block diagram model, the block diagram model including sections, a first subset of sections designated post-processing unit sections and a second subset of the sections designated as core processing unit sections;" "generating software source code for the block diagram model with a code generator using the second subset;" and "connecting the software source code to the first subset via an inter-process communication link, " as recited in claim 24. The corresponding claim elements in claims 34 and 35 are also not disclosed. These claim elements will be discussed in sequence below.

The Examiner states that all of the elements of claims 24-29 had been previously discussed in the rejections of claims 1-23(OA page 8). Applicant disagrees. Applicant notes that the claim element of a *"block diagram* model" does not appear in claims 1-23. Accordingly, Applicant submits that Suguta does not disclose "receiving" or "receive" "user input through a graphical user interface (GUI) specifying a block diagram model, the block diagram model including sections, a first subset of sections designated post-processing unit sections and a second subset of the sections designated as core processing unit sections," as required by claims 24, 34 and 35. There is no discussion of *block diagram* models in Sugata and therefore no disclosure or suggestion regarding these claim elements. Therefore, Sugata does not disclose "claim feature" as required by claims 24, 34, and 35.

Therefore Suguta cannot disclose "generating software source code for the *block diagram* model with a code generator using the second subset," as required by claim 24 and the corresponding limitations required by claims 34 and 35.

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Applicant also respectfully submits that Suguta does not disclose "connecting the software source code to the first subset via an inter-process communication link," as required by claim 24, or the corresponding limitation required by claims 34 and 35. Applicant submits that Suguta does not disclose an inter-process communication link that connects the software code, which is generated using a second subset of sections designated as core processing unit sections, to the first subset of sections designated post-processing unit sections. Since the system disclosed in Suguta is not a multi-process system, Suguta does not need to, and does not, disclose an inter-process communication link.

In light of the aforementioned arguments, Applicant respectfully requests withdrawal of the rejections of claims 24, 34 and 35 under 35 U.S.C. §103(a) and the allowance of the claims.

I. Claim 25

Claim 25 depends on claim 24 and, as such, incorporates all of the elements of claim 24. Therefore Sugata cannot support a valid 35 U.S.C. §103(a) rejection of claim 25. Applicant respectfully requests withdrawal of the rejection of claim 25.

J. Claim 30

Claim 30 has been amended to recite "transmitting the generated software source code to a target for execution." As discussed previously, Sugata fails to disclose or suggest this new claim element.

Sugata further fails to disclose or suggest still other elements of claim 30. For example Sugata does not disclose at least "specify a *block diagram* model, the block diagram model including data having internal pre-defined data storage classes and external custom data storage classes"; or "generate software source code for the *block diagram* model with a code generator using the internal predefined data storage classes and the external custom data storage classes." As noted above in the discussion of claim 24, Sugata does not discuss block diagram models.

In light of the aforementioned arguments, Applicant respectfully requests the allowance of claim 30.

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K. Claims 31-33

Claims 31-33 depend on claim 30 and, as such, incorporate all of the elements of claim 30. Accordingly claims 31-33 are not rendered obvious for the reasons set forth above with respect to claim 30. Applicant respectfully requests withdrawal of the rejection of claims 31-33.

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Conclusion

In light of the above Amendments and argument, Applicant submits that Suguta fails to disclose or suggest the elements of the claimed invention. Therefore, all claims are allowable.

Please charge any shortage or credit any overpayment of fees to our Deposit Account No. 12-0080, under Order No. MWS-041RCE. In the event that a petition for an extension of time is required to be submitted herewith, and the requisite petition does not accompany this response, the undersigned hereby petitions under 37 C.F.R. §1.136(a) for an extension of time for as many months as are required to render this submission timely. Any fee due is authorized to be charged to the aforementioned Deposit Account.

In view of the above comments, Applicant believes that the pending application is in condition for allowance and urges the Examiner to pass the claims to allowance. Should the Examiner feel that a teleconference would expedite the prosecution of this application, the Examiner is urged to contact the Applicant's attorney at (617) 227-7400.

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Respectfully submitted,

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